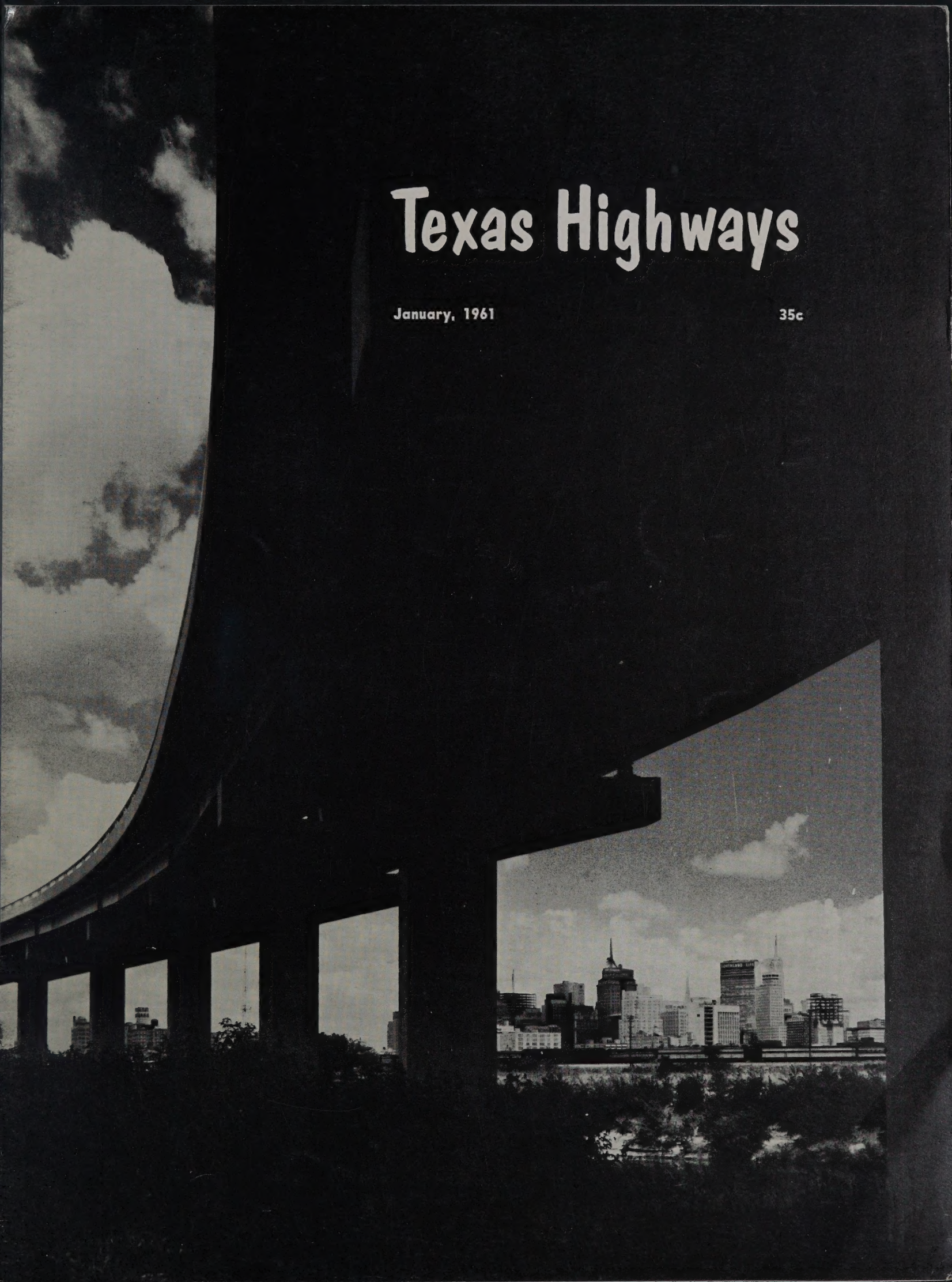
Texas Highways

January, 1961 35c



Texas Highways

Volume 8 • Number 1

January, 1961

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Shortly after the accident, the structure looked like this.

Overpass Repair in Eastland County

R. P. Haun
Senior Resident Engineer
District 23

The first serious injury to a prestressed concrete beam structure happened recently in Eastland County. A truck, loaded to a height of sixteen feet, struck the outside beam of a county road overpass ten miles east of Ranger on Interstate Highway 20, damaging it beyond repair.

This necessitated the removal of that portion of the slab supported by the 57-foot 6-inch Type B prestressed beam. Traffic was detoured by way of the exit and entrance ramps during daylight hours while construction was going on, but the main traffic lanes remained open at night.

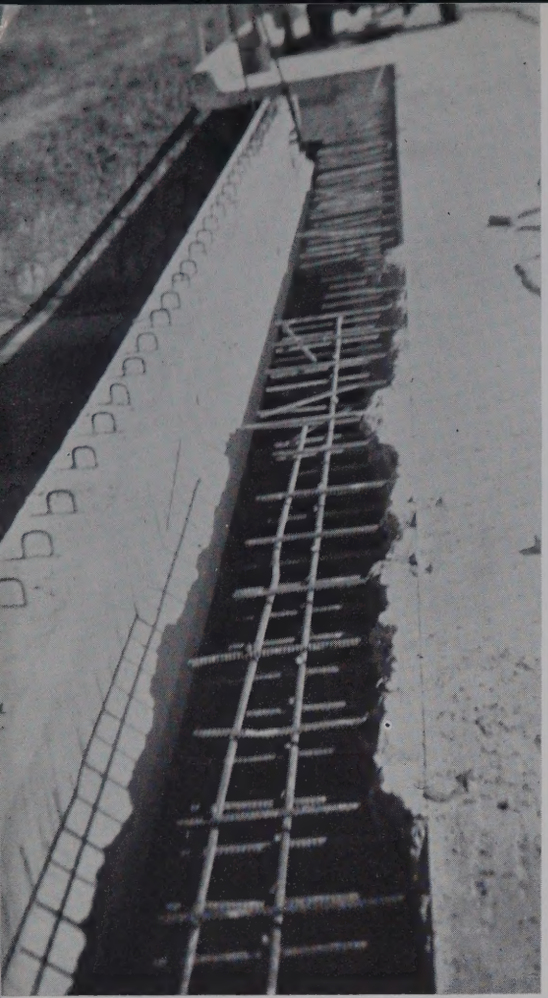
Plans and specifications were drawn up in the District design office for the repair job to be financed with maintenance funds, and bids were opened at the District Engineer's office in Brownwood.

Having submitted the low bid of $4,782, Austin Bridge Company of Dallas was awarded the contract and began actual work July 15.

Railing and posts were carefully

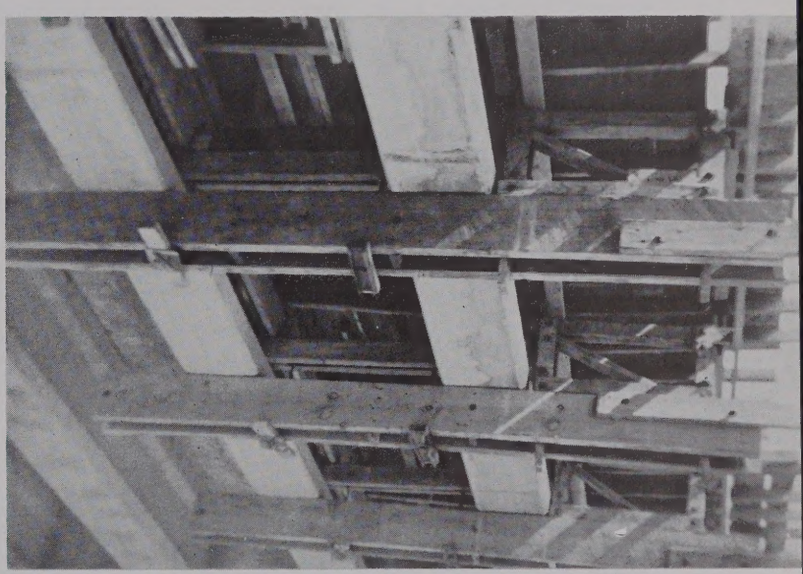
Broken concrete is loaded for disposal as ditch retards.

The underside of the damaged beam shows the exposed strands.

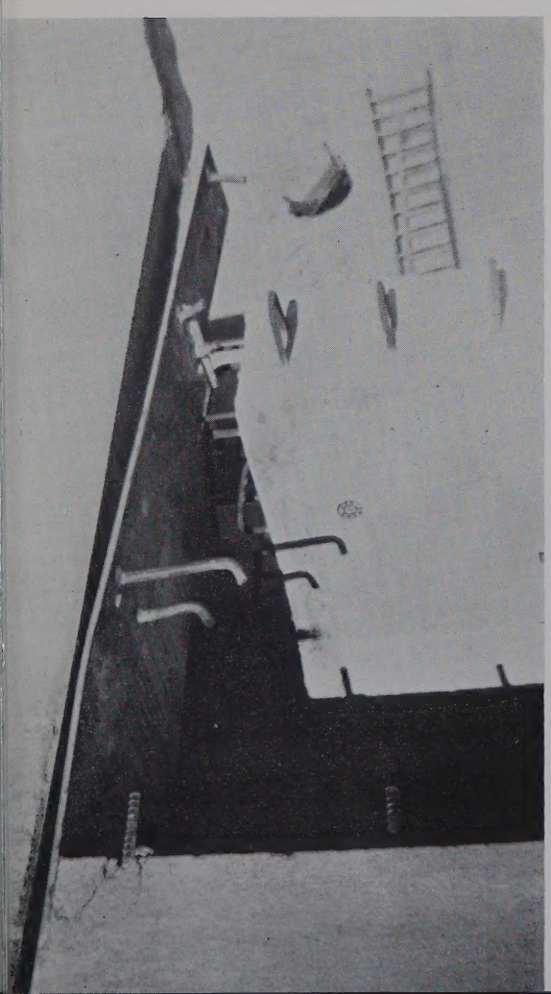


The sawed joint gives a uniform break-back line.

The new beam is set.

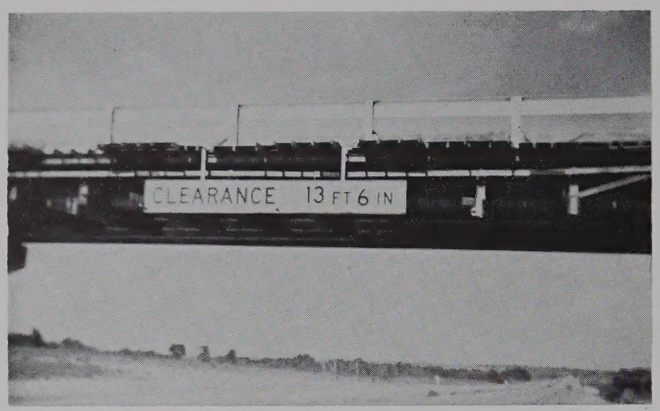


Inside bottom flanges of beams were used for slab support and needle beams for overhang.

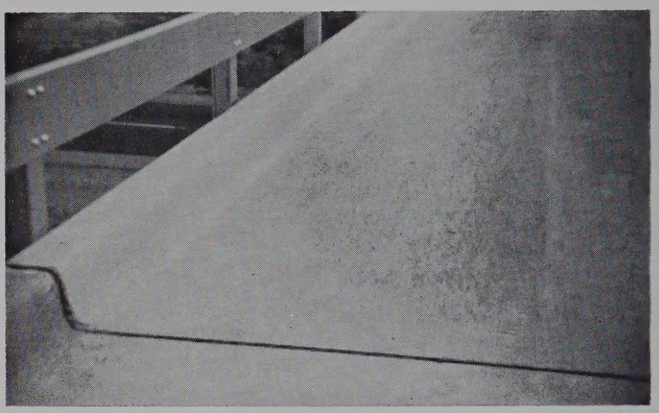


The old armored joint is in place to be reused.

Slab is poured.



A revised sign indicated decreased clearance.



Joint is barely visible in finished slab.

removed from one side of the damaged span and were stored on the project for future re-erection.

Three preparatory steps were taken prior to the removal of any concrete —a three-inch sand cushion was placed on the main lane surfacing to protect it from falling concrete, and falsework was erected under the center of the damaged beam to allow half of it to be removed at a time. Next, a joint was sawed three-fourths of an inch deep along the longitudinal break-back line, which was six feet six inches from the outside curb line and fifteen inches from the adjacent undamaged beam.

The slab was then broken off and the broken concrete loaded and hauled to the nearest locations needing ditch protection.

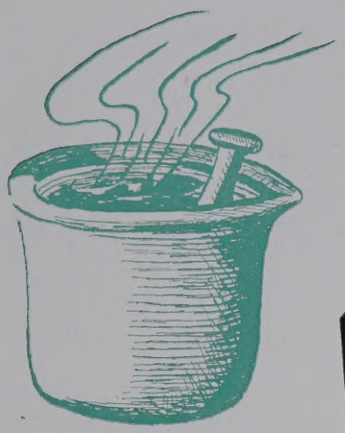
No difficulties were encountered in placing the new beam. After this was done, forming began using the inside bottom flanges of the beams for slab support and needle beams for the overhang.

A revised clearance sign was necessary, since the needle beams decreased clearance to approximately fourteen feet. The new sign was illuminated at night by floodlights placed on the ground a short distance from the structure.

After the new reinforcing steel was lapped four inches with the existing steel and welded on both sides, pouring of the slab was done by transit mix.

Construction operations were completed Friday, July 22, just one week after actual work had started.

Finished product.



asphaltic hot mix concrete curb

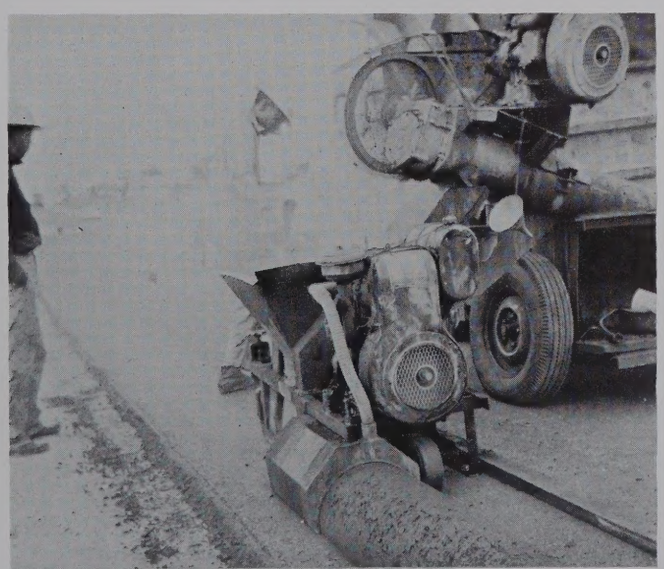
R. A. Brown, Supervising Designing Engineer
District 2

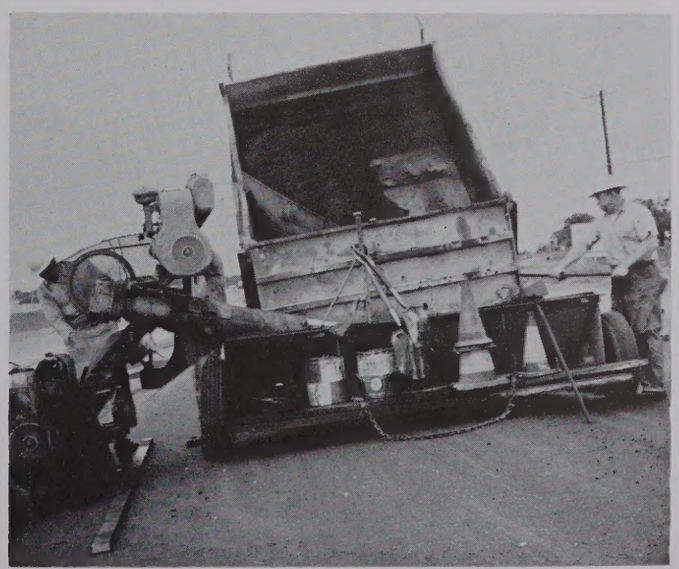
The advantages and disadvantages of asphaltic concrete curb have been considered for several years. Prior to construction of the project discussed in this article, use of this type curb in District 2 had been limited to small quantities, usually hand-formed. Needless to say, the results of this type construction were not too impressive.

With the advent of the automatic curb paver, interest in this type curb was stimulated because of its relatively low first cost and the ease of constructing various curb shapes. In October of 1958 bids were asked for on a proposed improvement project on State Highway 183 between Fort Worth and Dallas. This first proposal contained 106,000 linear feet of concrete curb of various types. Low bid prices received on this curb ranged from $1.60 to $1.80 per linear foot. The Highway Commission rejected all bids.

Bids were again asked for in February of 1959 on a revised proposal calling for 86,000 feet of asphaltic concrete curb, and 20,000 feet of concrete curb. Uvalde Construction Company, Dallas, Texas, was the successful bidder. Asphaltic concrete curb was bid at 34 cents per linear foot, and concrete curb at $1.50 per linear foot. The use of asphaltic concrete curb gave an apparent $120,000 saving on the curb item alone, when compared to the first bids received.

Texas Highway Department Standard Specification Item 317, "Hot Mix Asphaltic Concrete Pavement (Type C)," was the governing specification for the pavement item on this contract, and the use of this same material was permitted in constructing the asphaltic concrete curb. The hot mix asphaltic concrete was delivered to the curb machine at normal paving temperatures. The contractor devised a rapid and very effectual means of supplying asphaltic concrete to the curb machine. Baffles were constructed across one rear corner of the haul trucks, forcing all





The curb paver and automatic feeding device are in operation here forming the asphaltic concrete curb.

Concrete riprap noses were used at median crossovers.

mix dumped to be concentrated at one corner of the dump bed. The mix was dumped into a portable hopper towed by the haul truck, then transferred to the curb machine by a power-driven auger. A guide template for the curb paver was nailed to the pavement to insure straight and uniform curb lines.

The asphaltic concrete curb was used principally as a median barrier curb. Tip ends of bullet noses at median crossovers were constructed of concrete riprap because of the normal excessive traffic abuse at this point. Curb inlets were constructed of concrete by gapping the asphaltic concrete curb, sawing the ends to straight lines, and then forming the concrete curb inlet. The median was backfilled by normal backfilling procedures. No more than normal care was exercised in blading and shaping of the backfill material.

Shortly after the asphaltic concrete curb had been constructed, results of several accidental crossings were observed. The curb showed that it could withstand this normal traffic abuse with little damage to the curb.

At this time it is impossible to determine definitely the life expectancy of this type curb. An attempt was made to overcome this unknown factor by providing sufficient mass in curb cross-section to withstand considerable weathering and traffic abuse. No unusual construction difficulties were encountered. On this particular project, asphaltic concrete curb proved to be a cheap and effectual means of curbing a highway median.

Finished texture of the curb is satisfactory.

Curb inlets were also constructed of concrete.

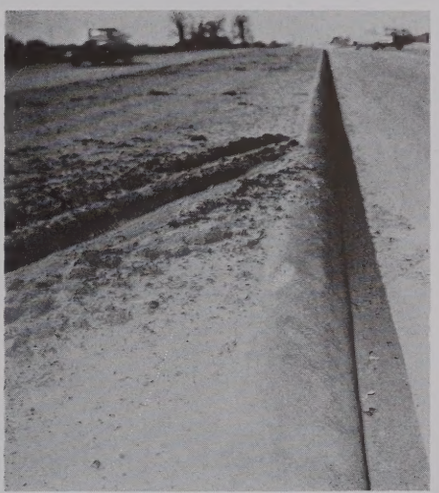
1

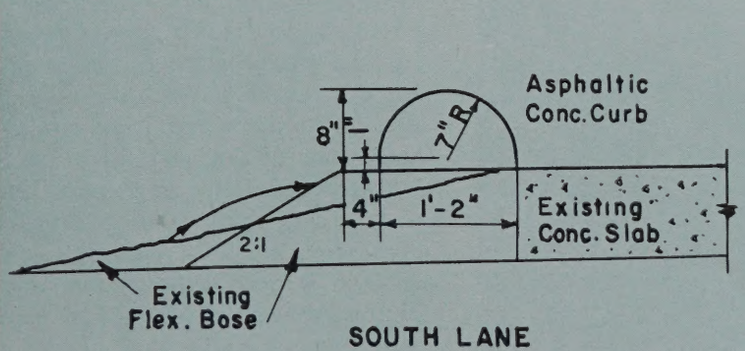
2

Accidental crossings of the median cause very minor damage to the asphaltic concrete curb.

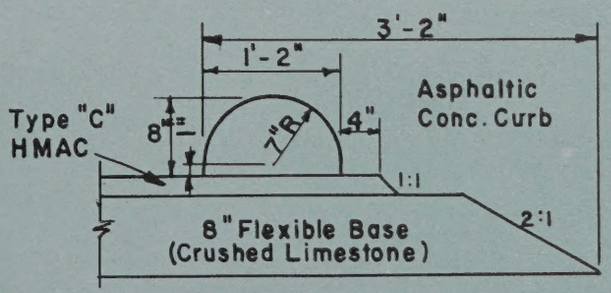
Asphaltic concrete curb is used here in lieu of open-ditch drainage in an area of restricted right of way.

3





SOUTH LANE



NORTH LANE AND ALL TURNING LANES

Typical section of asphaltic concrete curb.

This picture shows typical appearance of a post during the period between application of the aluminum paint and addition of the black stripe, using the old method.

Beautification of our Texas Highway System has become a major part of the highway program. Much time and money is being invested in landscaping, attractive bridge design, and eye-catching roadway alignment. Perhaps in striving to construct and maintain better looking highways, we sometimes neglect the appearance of the most common item found on a highway—the familiar black and aluminum guard post.

even GUARD POSTS

The usual procedure for painting or repainting a guard post has been to first apply the aluminum paint. After this paint has dried, the black stripe is added. This system has several bad features. The sign man needs to make two trips to the same location in order to allow time for the aluminum paint to dry. The post is usually left in a very unsightly condition during the period between the application of the aluminum paint and the application of the black stripe. Painting the black stripe to a sharp line, without any paint running onto the aluminum, is nearly impossible, and at best is very tedious and time-consuming work. This type of paint job often results in black stripes of

A scriber with two sharp points outlines the width of the black stripe and locates the stripe at the correct distance from top of post. The device is rotated around the post to mark it.

Grooves are cut in the post with a hand saw.

Note grooves and offset-mounted delineator.

can be attractive

James M. Miller, Skilled Laborer
District 4

irregular width and ragged edges.

We use the following procedure, and have found it both fast and economical.

The post is first marked for the black stripe by use of a rotating scriber that rests on the post top. This device, as it is rotated, marks both the upper and lower edges of the stripe and also locates the stripe at the proper distance from the top of the post.

Grooves three-eighths-inch deep are cut around the post along lines marked by the scribing device. An ordinary D-8 carpenter's handsaw will work.

Delineators are mounted using one-fourth-inch lengths of rubber tubing on the nails to act as spacers. This type of offset mounting permits paint to be applied without smearing the delineator.

The black stripe is then painted, using a curved paint guard that fits

The black stripe is painted, using curved paint guard in grooves.

Next, the aluminum portion of the post is painted.

into the saw cuts and rotates about the post. This guard enables the painter to work rapidly with no danger of painting beyond the proper lines.

The remainder of the post is now painted with aluminum, using the same curved paint guard to prevent aluminum paint from getting on the black stripe.

The saw cuts now act as barriers to prevent the fresh paint from running together and forming irregular lines.

Result—a neat and attractive guard post that will add much to the overall appearance of the roadway.

From an economic viewpoint, this result has been accomplished by one man, one vehicle, and one trip to the job. The time required to paint a post, after the grooves are cut, has been timed at one minute, thirty seconds.

This system is also applicable to square culvert markers. The only difference would be the use of a square paint guard instead of the curved guard shown.

Completed post and curved paint guard—note the neat lines, clean delineator, and absence of running paint.

NEW SNOW PLOW

J. D. Willson
Senior Maintenance Superintendent
District 5

Alongside a motor grader—

In this age of miniature golf courses, miniature fruit trees, compact surveying instruments, and compact automobiles, District 5 decided to go modern with a compact snowplow.

One of our Skilled Laborers, Robert C. Houston, picked odd pieces of metal out of the scrap pile and built a snowplow attachment for one of our power lawn mowers for use in cleaning the snow from the concrete walks at District Headquarters.

The compact in operation—

State Highway Commissioner C. F. Hawn gives principal address at the dedication ceremonies of F.M. 2517.

excerpts from

F. M. 2517 Dedication Address

Charles F. Hawn, Member Texas Highway Commission

Someone should plant a Texas flag in this Piney Woods soil and claim this territory for the State of Texas. We are doing more today than dedicating a Farm-to-Market Road. We are celebrating the completion of a permanent link across the Sabine River that will join the people of southeastern Panola County to the State of Texas in fact as well as in spirit.

The most important segment of the eight miles of Farm-to-Market Road 2517 is that which spans the Sabine River. The strong-flowing Sabine has been a mixed blessing to the people of this area. In past days it served as a highway itself. It was a water route on which flatboats carried cotton to market from such establishments as H. C. La Grone's historic gin at Deadwood, built a hundred years ago. The Sabine has also provided many a "mess" of catfish for boys sitting on its banks with cane poles.

On the negative side, the Sabine has been a natural barrier that has virtually isolated southeastern Panola County from the rest of Texas. The Sabine has made it easier to get to the State of Louisiana than to the county seat. It has made necessary a Louisiana route number for many Texans receiving their mail here. It has made necessary sending more than 80 children to a Louisiana school—where they learn about the Battle of New Orleans rather than the Battle of the Alamo.

The Sabine has made southeastern Panola County a historic "no man's land," claimed by everyone and owned by none. For a hundred and fifty years, nations quarreled over the boundaries of this area. France, Spain, Mexico, the Republic of Texas, and the United States all claimed it at one time or another. After the purchase of the Louisiana Territory by the United States, this area became in 1806 part of a Neutral Ground

Discussing the new F.M. bridge are, left to right, Hawn, District Engineer G. A. Youngs, County Judge E. C. Winfrey, Senator Wardlow Lane, and J. Ross Hopkins, who headed the chamber of commerce committee.

established due to the indefiniteness of the western boundary of Louisiana.

Since 1846, when the County of Panola was organized and named for one of its best-known products—King Cotton—the county has legally been part of Texas. But the Sabine River recognizes no legal document and it has continued to force Texans living in the Deadwood, Logan, and Galloway communities to go the long way around to visit the rest of Texas.

F. M. 2517, the highway that solved the problem, was a long time in coming. One of the factors which held back its development was a proposed reservoir along the Sabine with a projected dam site several miles upstream from the southeast corner of Panola County. It was feared that this dam, if constructed, would form a large lake that would inundate almost any road constructed in this area. The fact that such a lake was contemplated had a dampening effect on the interest shown for some time in getting this road.

In 1955 County Judge E. C. Winfrey of Carthage expressed strong interest in the road and explained to us the difficulties of the people here in getting to their county seat, receiving mail, and sending their children to school in another state. When it became apparent in mid-1956 that the proposed reservoir on the Sabine was probably far in the future, interest in obtaining this road was revived.

In the summer of 1957, a group of citizens from Panola County came before the Texas Highway Commission in Austin. Among those presenting the county's viewpoint were State Senator Wardlow Lane of Center, former State Representative V. L. Ramsey of Beckville, Superintendent of Schools Q. M. Martin of Carthage, and Ross Hopkins, Chairman of the Highway and Transportation Committee of the Panola County Chamber of Commerce.

As a result of that hearing, the first section of this road was designated as a Farm Road in the 1957-58 State Farm-to-Market Road Program. The highway was designated from Farm Road 1401 near Antioch to the west bank of the Sabine River, but did not include construction of the bridge. It was felt that if the first section were constructed, the building of the bridge in a later program would be easier because a road would be available to carry materials to the bridge site.

The first section, some 4.7 miles in length, was contracted to R. C. Buckner. The engineering supervision was placed under Senior Resident Engineer Tom Hunter of Carthage. Mr. Hunter placed Chief Inspector George Abernathy in charge of the engineering inspection. Work began on December 8, 1958, and was completed on June 3, 1960, at a total cost of $286,540.

Before completion of the first section, the remaining portion of the road was designated by the Highway Commission in the 1959-60 Federal Aid Secondary Program. This extended the original road to F. M. 31 just south of Deadwood and included the construction of a bridge across the Sabine. Construction began on November 3, 1959, by contractors W. Paul Carlisle and Menefee Bros., Inc., with Tom Hunter again being given the responsibility for the engineering supervision. He placed in direct charge of the job Howard Dell Moore, Senior Designing Engineer, of Carthage. The construction was completed this month, a year after its beginning, at a cost of $391,960. The total cost of this road from F. M. 1401 near Antioch to Deadwood is $678,500—and to the people living here, worth every penny. It seems fitting that this long-desired road is being opened at the same time of year that we annually give thanks for our blessings.

F. M. 2517 will cut six miles from the distance to Carthage and 16 miles will be saved for those traveling from Antioch to Deadwood. Texas school children can now attend school in Texas, and Texas citizens will get their mail on a Texas route.

Whether the automobile using this road bears a license plate from Texas or New York, the Texas Highway Department is proud of the achievement which has made a smooth, fast route across the Sabine available to everyone. With the dedication and opening of this highway, Texas citizens living here can stop explaining to their relatives why their mail has to be sent to Louisiana, and why their school children can tell more about the Louisiana Purchase than the Victory at San Jacinto.

how good is ? Aerial Mapping

George S. Meyer, Supervising Resident Engineer
District 15

Since January 1958, District 15 has initiated 25 aerial-mapping projects covering a distance of 309 miles at a total cost of $313,684—an average cost of $1,015 per mile. The usual project covered aerial photography and preparation of 1:40 scale planimetric and topographic maps with spot elevations and a one-foot contour interval, for a 1,200-foot width. Some contracts provided for ownership data and cross sections. It was desired to secure maps to the accuracy required by the specifications which would serve for determination of route locations (mosaics) and for detailed design, right of way, and plan work (planimetric and topographic maps, and cross sections).

When the projects were begun, it was hoped that an accurate map could be secured with only a minimum of spot checking. These maps would save the Highway Department thousands of dollars over the conventional survey methods and would speed up the accelerated Highway Program. This method of map production has accomplished savings in cost and does materially speed up the work; however, it falls short of some expectations. There has been dissatisfaction among various engineers regarding the quality of some of the work and the extensive checking necessary to secure a good job.

At the beginning of our program, difficulty arose when the aerial mapping company did not fully understand what the highway engineer wanted. Discussions and contacts with companies located locally alleviated misunderstanding; however, when work was done by correspondence with out-of-state companies, considerable misunderstanding arose. This may still be a problem, but according to the Austin office no contracts have been made with out-of-state organizations in the past eighteen months.

The following comments are offered regarding past work:

Mosaics

Aerial mosaics have proven to be extremely useful and valuable in route studies and are a definite aid in establishing highway locations along newly designated routes. Their value is limited for improvements along existing highways. A recent mosaic, covering an area 5,000 feet in width, scaled so that one inch equals 200 feet, averaged $40.26 per mile for a 35-mile section. This mosaic has proven its value many times over. The quality of the mosaic is dependent on the individual contractor. Some companies are experienced and equipped to do good work while others encounter difficulty in turning out an acceptable product. However, it is the responsibility of the engineer in charge to require the contractor to meet the specifications.

Planimetric and Topographic Layouts

This District establishes on the ground a survey base line to the same accuracy used for right of way surveys and for construction staking, and furnishes the contractor coordinates and bearing of the survey line.

This accuracy is usually 1:10,000 or greater. The aerial contractor pans this survey line and uses it for all horizontal control. Planimetric sheets were found to have many errors, such as misplotting of fences (particularly where partially obscured), omissions due to drafting from the manuscript, and other errors due to the capabilities of the plotter. After the first year's work, this District added to the specifications the requirement that the contractor field edit each completed sheet. While this requirement eliminated most of the omissions, it was still found necessary for the state to carefully field check each sheet.

The planimetric sheets are primarily used as a base map for right of way, schematic, and plan sheets. Since the accuracy requirement is one foot hori-

zontally, right of way maps could be prepared from the data on the planimetric map. However, errors in position were found on property lines even though the sheets were spot checked. To save possible embarrassment and clouding future land titles, it has been decided to field survey each property line. In urban areas the physical features plotted on the planimetric map have saved the state many thousands of dollars in surveying and plotting. But again, all critical points are field checked by survey methods.

The topographic maps with one-foot contour lines are extremely valuable in preparing the initial highway geometric layout and later, on a reduced scale, are excellent base maps for the official schematic layout. It is still necessary to perform field checks by taking cross sections and comparing them with the topographic map contours. Even though errors have been found in the contours, they are sufficiently accurate for securing cross sections for earthwork. Errors found on the aerial mapping work are no more than those found by securing cross sections by field-survey methods. We feel it is necessary to run profiles and take cross sections with the state survey party on all railroads and intersecting streets and highways where grade separations are proposed. Also, culvert sites and channels are usually checked using field-survey methods.

Spot Elevations and Cross Sections

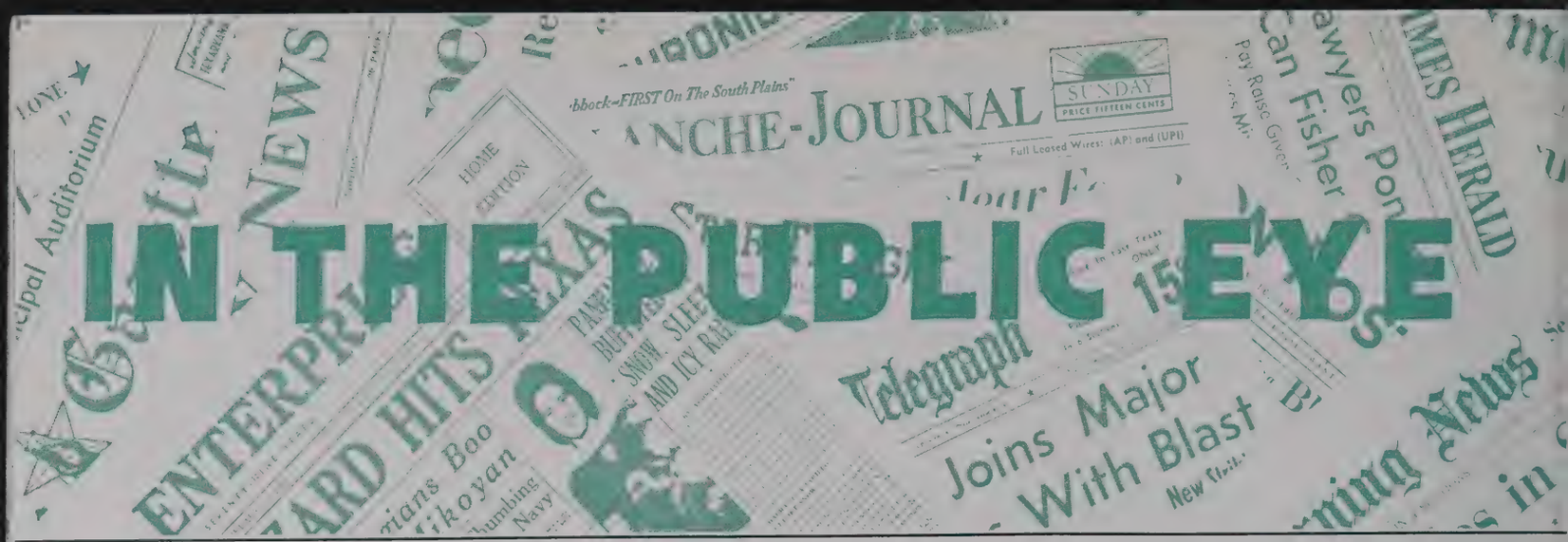
Cross sections using spot elevations obtained by photogrammetric methods are usually not much more accurate than those obtained by scaling from topographic contour sheets. Also, difficulty has been experienced by some contractors in recording the spot elevation readings on IBM data-processing cards. It is the opinion of the Resident Engineers in this District that in the future this work should be handled either by field-survey methods by their own forces or directly from the contours of the topographic maps.

Ownership Data

Several contracts have been let wherein the contractor was to show ownership on the planimetric maps with recorded ownership data. Since most of the photogrammetric companies did not place experienced personnel on this type of work, many errors and omissions were found. The Resident Engineer also had to perform all title search work in order to check the contractor's product. This type of work will be omitted from future photogrammetric contracts in this District.

In conclusion, it is the writer's opinion that the highway engineer should utilize aerial mapping as much as possible to save time and expense in all applicable phases of the work. The extent of this use will be determined by the quality and accuracy of the work performed by the photogrammetric companies. Maps with greater accuracy and reliability could be obtained if the mapping company would spend more time on editing and field checking with survey parties. The Highway Design Division is now assisting in the checking of the maps by using a stereoplotter. This type of checking, coordinated with field checks, is reported to be more satisfactory as it covers the entire area of the map, and the weak spots can be pointed out for field check. With the coordinated checking procedure, and with the continuing improvements in the specifications which evolve from experience, progress is being made toward the desired accurate map which will require a minimum of checking.

SAFETY MEETING TODAY
THE MAN FROM THE DISTRICT OFFICE SHOULD BE HERE ANY MINUTE NOW, TO PRESENT HIS TALK ON "HOW TO AVOID FALLS"!
SUBJECT TODAY
FALLS!
DISTRICT SAFETY ENGINEER
Al Marines



A PARTING OF PATHS

Houston Post, in a feature story datelined Brenham—"A man who has spent more than 39 years helping build Texas' giant highway system will retire here at the end of January.

"He is Bert Hedick, supervising resident engineer of the Brenham office of the State Highway Department, who has supervised the construction of more than 300 miles of Gulf Coast area highways.

"His successor will be Arthur A. Geick, 31, a native of Brenham, who currently is resident engineer under Hedick."

DO UNTO OTHERS . . .

Plainview Herald, covering District 5 Engineer Oscar Crain's speech to Plainview Rotary Club—"The speaker urged a Golden Rule approach to the operation of automobiles and trucks on our highways to cut down the appalling toll of lives and property damage enacted each year.

"Crain said that good highways paid their own way and promised continued dedication to the job on the part of highway employees in Texas.

"The program was in charge of H. C. Weaver, resident engineer of the State Highway Department."

BUILDING STONES

Tyler Morning Telegraph, reporting the Panola Road dedication—" 'Someone ought to plant a Texas flag in these piney woods and claim this territory for the State of Texas,' Chas. F. Hawn, member of the Texas Highway Commission, told a large crowd at the dedication of FM Road 2517 Wednesday afternoon.

"The road furnishes easy access to the isolated eastern part of the county.

"The road which is approximately 8 miles long . . . is the only farm-to-market road in the state across a major stream."

Marshall News-Messenger, with more details on the above—"G. A. Youngs, district highway engineer from Atlanta, spoke briefly and introduced members of his staff who worked on the project."

Panola Watchman (Carthage), added its editorial comment—"Roads have been the building stone for our nation. . . . There is nothing that contributes to the well being of a county more than good roads.

"Our thanks are extended to the Texas Highway Department for its effort in bringing this newest link to our county network about. . . ."

A BIG TASK

Paris News, headlined "$2 Million Task"—"Texas' highway modernization program is touching Paris in a major manner now and will eventually provide the city with four-lane approaches and a complete loop encirclement . . . [reported] Richard Babb, the district's senior resident engineer. . . ."

Corpus Christi Caller, in a news story—"Traffic started rolling yesterday over the new overpass Highway 9 bridging the newly built railroad approach to the railroad switching yard near Highway 44.

". . . contractors rushed construction struction to complete it two months ahead of schedule because businessmen along Highway 9 complained that detouring traffic was hurting their trade."

A CREDIT TO ALL

Orange Leader, revealing—"One of the newest and most modern tourist information buildings in the State of Texas will be opened tomorrow on Interstate 10 on the outskirts of Orange, Emmett Sheffield, local bureau chief, said today.

" 'We are exceptionally proud of our new building and feel it is a distinct credit to the people of Texas and the State Highway Department. We are in a better location in more modern facilities to render more extensive service to the traveling public,' he said."

A SOUND APPROACH

Dallas Morning News, editorially exploring Air Traffic Conference's proposal for checking exodus of U.S. dollars abroad via tourist promotion by the government—"Travel promotion experience in states such as Hawaii and Florida is said to show a return of more than $200 for every dollar invested in advertising and other stimuli. Wouldn't transportation, resort, and other interests have such a primary interest in inducing more foreigners to visit here that government promotion would be unnecessary?

"But, however it is done, promoting tourism is a sounder approach to the dollar problem than some others that are being suggested."

NEVER BEFORE

Paducah Post, announcing that more vehicle license tags have been sold than ever before—"When sales reach $50,000 the county receives only half the registration fee and the other half is

sent to the Texas Highway Department. This is the first time in the history of the county that it has become necessary to pay the Texas Highway Department half the fee."

MULTICOLORED MARKINGS?

Sweetwater Reporter, describing the elaborate marking system planned for Interstate 20 through Sweetwater and Roscoe areas—". . . when a stretch of the road is completed so that a general contract can be let, the federal government will put up multicolored ceramic signs that point the way to towns, resorts, lakes, lodging, gas, oil, cafes, etc.

"It is said that the federal signs are very costly and elaborate with overhead signs stretching some 40 feet long and four to eight feet high."

FLEXIBILITY NEEDED

Dallas Morning News, under Richard M. Morehead's by-line—"The Highway Commission should be authorized to zone roads for speed above 60 miles per hour, as well as below, the Texas Good Roads Association asserted Monday.

"Speaking after the resolution was adopted, State Highway Engineer D. C. Greer commented . . . 'It's not a cherished job, but it should be done.'

"Greer said he is not convinced that raising the speed limit on main highways would cause motorists to drive even faster, and exceed the higher speed limit."

Abilene Reporter News, noting that—"The current near-blanket regulation is not being respected. Motorists would be more likely to respect limits that are realistic."

Fort Worth Star-Telegram, editorially considering this subject—". . . requirements for safety vary in great degree with the condition of highways, their design and the normal flow of traffic.

"Flexibility in the setting of speed limits could serve both the convenience and the safety of the motoring public."

A DOUBLE-BARREL REQUEST

Nocona News, saying that—"A double-barrel request for a farm to market asphalt road from Alcorn Corner on Highway 103 straight east to and around the north end of Lake Nocona has within the last week been carried to both the state highway commission at Austin and the district engineer's office at Wichita Falls.

"A delegation of ten, including a majority of the commissioners court met with the state highway commission last week and yesterday the same delegation met with District Engineer L. B. Dean in Wichita Falls.

". . . no commitments were made either at Austin or Wichita Falls. . . ."

MAINTENANCE, TOO

Houston Chronicle, via its Austin Bureau—"A recommendation to continue the $15 million-a-year state allocation for farm-to-market roads but allow the money to be used for maintenance as well as construction was adopted by the board of directors of the Texas Good Roads Association.

"A special committee appointed last January to study highway finance, also proposed that intensive study be devoted to the problem of state versus county responsibility for low traffic rural roads."

GOOD OL' DAYS

Abilene Reporter News, editorially looking back—and ahead—"Our roads are still not perfect, but you should have been around half a century ago and seen what passed for 'highways' in those days. Roads were so bad in spots one hated to see kinfolks' covered wagon creak into view, knowing a spell of wet weather might prevent their departure for home, and the extra prolonged strain on your own family larder might get serious.

"In the early days small-town people couldn't see the money going away from the community in the form of bad roads and expensive upkeep, but they were keenly aware of the few dollars absorbed by taxes for general purposes.

"It is probable the property owner earns a bigger return on money invested in permanent improvements than from any sources you can mention, and that includes that spent on more and better highways and secondary or farm roads."

AMADAY

Amarillo Daily News, with more on Amaday, the day Amarillo recognizes its year's achievements—"The expressway dedication, with ceremonies at each end, will highlight the Amaday observance.

"Hal Woodward of Coleman, member of the Texas Highway Commission, will cut the ribbon officially dedicating the E-Way."

SEEING RED

Houston Chronicle, revealing how—"Bright red signs will be fastened to barricades on Texas highway construction projects during the holidays in a special effort to eliminate traffic crashes."

Valley Morning Star, in a UPI story from Austin—"Gov. Price Daniel commended the State Highway Department and Texas Branch of Associated General Contractors Saturday for a joint effort to eliminate accidents at highway construction projects during the year-end holidays."

REMODELING MONEY

Houston Press, heralding a new program—"The Texas Highway Commission announced a $40 million 'highway housekeeping' project for 1961.

"The project will feature safety and proper upkeep of the state's highways.

"The safety-betterment programs will be divided evenly financially. Half of the $40 million will be spent for farm and ranch to market roads, and the rest, for the U.S. and state highway system."

THINGING BIG

Houston Chronicle, in its "Our City" column—"The County Commissioner's plan for a 90-mile belt highway circling the city approximately 15 miles out is a fine example of typical Houston 'big thinking.'

"Designation of the belt route as a state highway, as has been implied if a 300-foot right of way is provided, could mean that the state would pay the entire cost of construction plus 50 per cent of the right-of-way cost, although the state is not obligated to do this."

at Willis Ferry Site

Lake Texoma Bridge

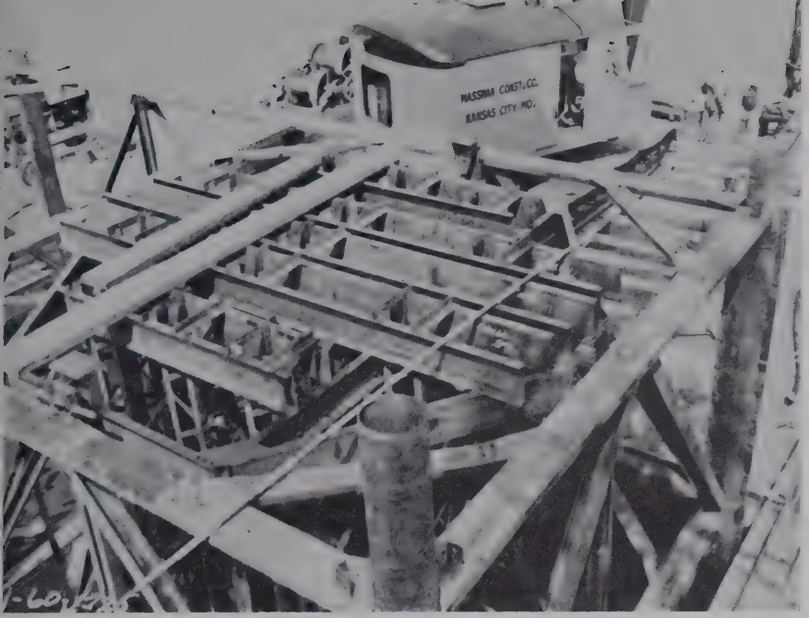
Another bridge between Oklahoma and Texas has become a reality with the completion of the bridge at Willis Ferry site across Lake Texoma. The bridge connects Oklahoma Highway 99 and Texas State Highway 10. Location of the bridge is approximately fifteen miles north of Whitesboro and seventeen miles south of Madill, Oklahoma. Contractors for this project were Massman Construction Company of Kansas City and John F. Beasley Construction Company of Dallas. The structure was designed by the Oklahoma Department of Highways and work was handled by the U. S. Army Corps of Engineers. It is of I-beam and continuous plate girder design with concrete deck. Substructure consists of concrete piers on steel foundation piling. .

Correct alignment of offshore piers, placing concrete in the dry in 60 feet of water, and placing continuous girders were major problems.

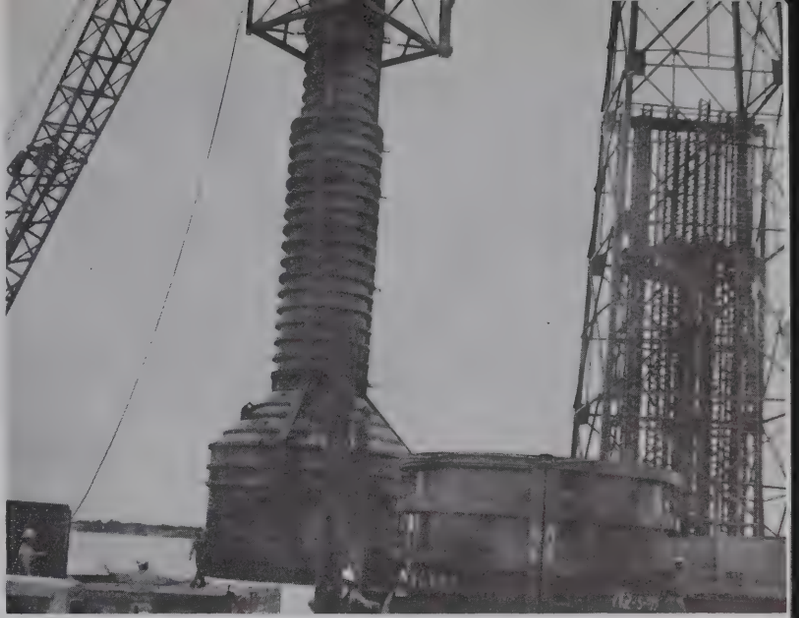
Proper offshore alignment of piling was accomplished by use of a structural steel frame around the pier location. This frame was held in position by driving 10-inch pipe spuds through wells in each corner of the spud cage. This cage served as falsework for positioning the pile template and forms for concrete to a point above the lake level.

This picture, taken before construction began on the State Highway 10 location, shows approach to bridge from Texas side.

Normally twelve or thirteen 12-inch steel H piling were required under each column. A pile template 40 feet long, weighing approximately 30 tons, was positioned inside the spud cage. Through this template, piling were properly positioned and driven to refusal in shale. The pile template was pulled and the column form was positioned inside the spud cage. A tremie seal was poured in water over and around the piling. This was a belled-out section fourteen feet eight inches in diameter and sixteen feet five inches in diameter five feet thick. A circular steel form was placed on the bottom of the shaft forms before they were lowered into the water. This form was to contain the five-foot seal and was left in place. Water-



Top of pile template is positioned inside the spud cage preparatory to pile driving.



The bottom ring of this form encloses the five-foot seal and remains in place.

tight shaft forms were hydraulically controlled and were designed to open for the full height at the one-third points around the form. Double-acting hydraulic cylinders opened or closed the forms.

After the five-foot seal had set sufficiently, column forms were dewatered and piling cut off to the desired grade. The top of the seal was cleaned of foreign matter, reinforcing steel was set, and concrete was placed in the dry. Concrete was placed to a construction joint above lake level. After 48 hours the forms were stripped by hydraulically actuated cylinders, lifted vertically, and transported by barge to the next location. Completion of bents was accomplished in a conventional manner.

Erection of the superstructure was done by John F. Beasley Construction Company. A dock was built out into the lake. Individual girders were transported from the storage area to the dock by a side-boom tractor. A crane set the girders in place on a floating unit consisting of 45 barge sections, each 10 by 20 feet and eight feet deep. A heavy framed steel falsework was built on the barge to support the girder sections. The frame

Pictured is the inside of the water-tight form prior to placing steel and concrete for remainder of shaft.

A side-boom tractor transports a girder from the yard to dock area for assembly on floating falsework.

A 270-foot section is assembled prior to moving it to position in the bridge.

This 130-foot section is positioned by hoists on barge deck.

was equipped with four hydraulic jacks of 300-ton capacity for vertical movement. Complete sections were erected on this floating unit, towed to position in the bridge, and lowered in place where it was tack-welded or connected in final position. Individual spans up to 270 feet were floated to position after assembly from the dock along the shore. These methods of engineering ingenuity enabled the contractor to complete the substructure and steel erection five months ahead of his original plan of operation.

Work was completed in October with the formal opening of the structure on October 30, 1960. The Texas Highway Department completed the connecting section of State Highway 10 to the bridge in September.

This "after" picture of State Highway 10 is made from the Texas approach to bridge.

OVERHEAD SIGN ILLUMINATION

Edward L. Smith, Senior Traffic Engineer
District 9

Overhead signs, back view, before addition of sign-illumination system. Sign sizes are eight feet by eight feet and eight feet by twenty-four feet.

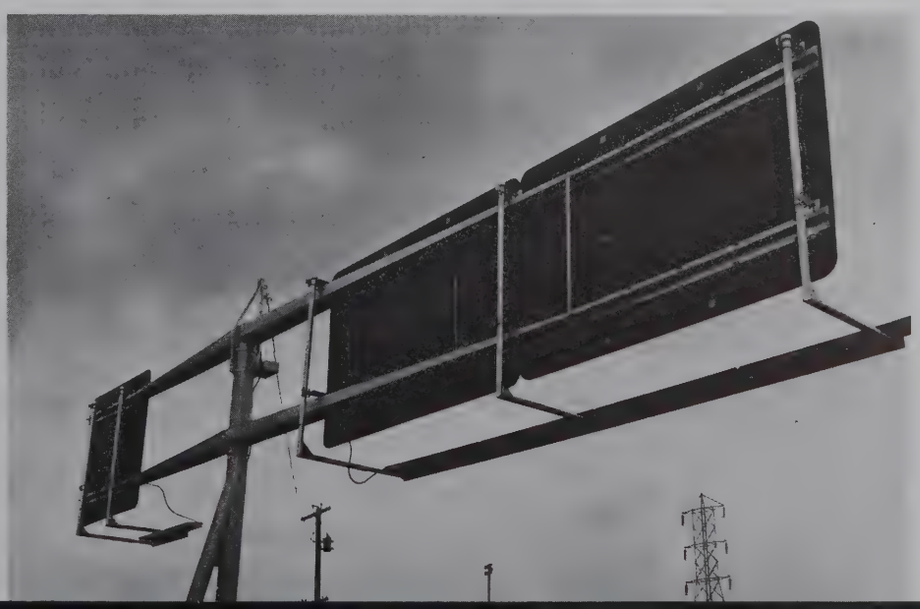
The National System of Interstate and Defense Highways and the multilane expressways and freeways in Texas cities have accelerated the use of large traffic guide signs mounted on structures over the roadway. The function of these signs is to prominently and effectively display carefully selected messages for the benefit and direction of drivers who are not familiar with the route or the area.

In some areas, the reflectorization of sign background and message provides satisfactory visibility of the overhead sign. However, drivers in certain locations are subject to conditions such as highly illuminated roadside businesses, heavy glare from oncoming traffic, and confusing lights in the background which render the reflectorized sign somewhat ineffective.

These conditions existed at the site of an overhead sign on U. S. 81 north of Waco, and to improve the performance of the sign and to gain experience in installing and operating sign-illumination systems, lighting fixtures were added to the existing sign.

L hangers for the light fixtures were fabricated in the District Shop and are made of 2½-inch pipe. Clips were also fabricated which permitted

Sign back, after addition of illumination system.



Sign front, showing light fixtures in place.

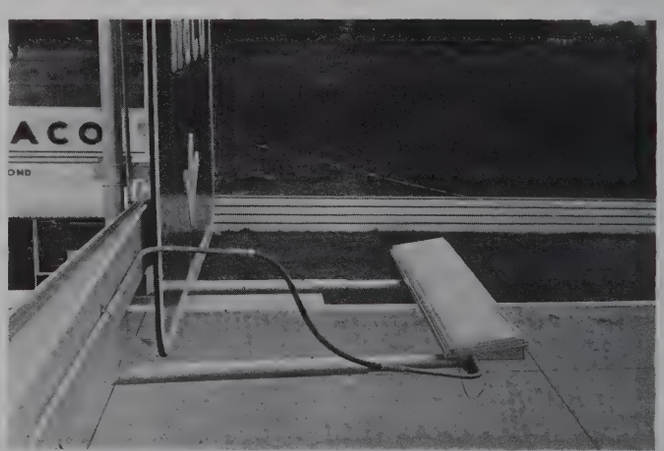
the hangers to be clamped to the horizontal beams supporting the sign panels. The hangers and clips did not require field welding during erection. The light fixtures are mounted on a four-inch structural steel channel which is supported by the L hangers in front and slightly below the bottom edge of the sign.

The six-foot-long light fixtures are of a special design for use with highway signs and consist of an aluminum frame, two 72T12 fluorescent lamps, reflectors, and weatherproof plastic cover. Each fixture is also equipped with its own ballast, but all are controlled with one photoelectric cell switch.

Measurements made at night of the illumination distribution pattern on the sign face place the level of illumination in the range of 15 to 30 footcandles, which is satisfactory for most conditions.

At this time, the sign-illumination system has been in operation for approximately six months and, except for replacing one ballast, no maintenance or operation difficulties have been experienced. Sign visibility is excellent in the opinion of the writer, considering the competition created by roadside advertising in the area.

Lighting fixtures are mounted in front and slightly below the bottom edge of the sign.



Telescoping horizontal supports permit adjustment of the fixture locations.

OVER THE HIGHWAYS

Comments . . . from the Traveling Public

• In behalf of the people of Karnes County I want to thank you for the wonderful job done by Maintenance Foreman Herbert L. Puckett and all of the employees working under him in the recent flood disaster at Kenedy.

These folks worked tirelessly at great sacrifice to themselves but in doing so saved many lives and indicated a true public spirit of which you can be justly proud.

We shall always be grateful to the State Highway Department and to these men for the unselfishness they showed in doing this fine job.

Ted Butler, County Judge
and Civil Defense Director
Karnes City, Texas

• In behalf of the City of Daingerfield and the Daingerfield Chamber of Commerce, we wish to take this opportunity to let you know what genuine pleasure it has been to work with the State Highway Department on the construction now being completed in our city.

The fine cooperation and help extended by your department heads, F. A. Sims and J. H. Crawford and their staff has helped the project to move along smoothly and effectively. Each time we called upon these gentlemen for assistance, they were most cooperative. . . .

Roy A. Nail, Mayor
W. J. Falls, President,
Chamber of Commerce
Daingerfield, Texas

• Texas drivers were generally courteous, especially when delayed while finding proper routes through cities. A posted speed of 60 miles per hour was generally ignored by Texans and out-of-state drivers followed suit. A speed of 65 miles per hour would be more reasonable in your wide-open spaces and dual highways.

Winterhaven, California

• I have been meaning to write this letter for some time, however, like most of us when things are as good or better than expected we take them for granted. It's only when they fall short of expectations that we start writing.

As a salesman I drive about 4,000 miles per month in Texas over highways which I consider second to none. I think the department merits a note of thanks for what has been done and for what is now being done.

Today I found out the courtesy of the men working for your department equals the fine roads they work on. A few miles out of Roma I ran out of gas—within 20 minutes I was again back on the road, thanks to the two men in a pick-up, license number XH-2437.

Needless to say, the only reward they would accept was my thanks.

C. W. Eckenrode
Houston, Texas

• Just a line or two to commend the entire State Highway personnel of Marfa. On numerous occasions, since the completion of Ranch Road 169 several years ago, members of the Marfa department have gladly rendered extra aid and assistance to motorists. Recently Mr. J. W. Hewitt of the Marfa department towed two cars and four pickups across a flooding creek. We ranchers and others who travel Ranch Road 169 do greatly appreciate such acts of courteous assistance. Best wishes.

Rudolph Mellard
Marfa, Texas

• I would like to take this opportunity of commending the men posted Thursday night at various intersections. During a very late trip to Eagle Pass, I found the men located at the La Pryor-Eagle Pass intersection alert, courteous, understanding, and on the job.

We know that you must be proud of your people who stand by in times of urgency. . . .

Joe Ridgway
Uvalde, Texas

• Thank you very much for the information describing your guard rail washer. The prints and magazine article do an excellent job of explaining the machine.

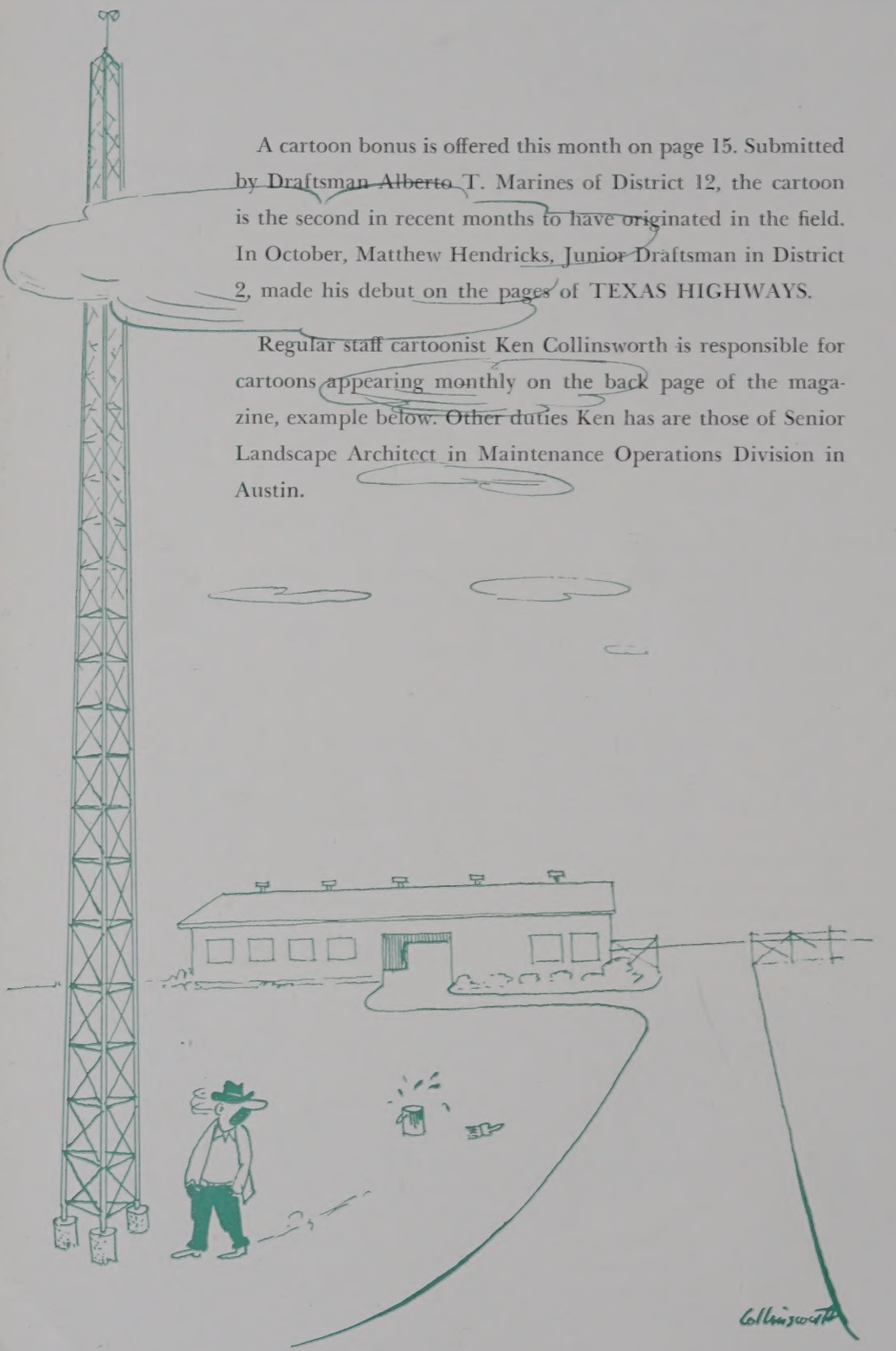
Your magazine TEXAS HIGHWAYS is to be complimented for its use of pictures and variety of articles. I don't think that I have ever read a service magazine with more genuine interest.

C. M. Lund
Birmingham, Michigan

To and From Our Readers

A cartoon bonus is offered this month on page 15. Submitted by Draftsman Alberto T. Marines of District 12, the cartoon is the second in recent months to have originated in the field. In October, Matthew Hendricks, Junior Draftsman in District 2, made his debut on the pages of TEXAS HIGHWAYS.

Regular staff cartoonist Ken Collinsworth is responsible for cartoons appearing monthly on the back page of the magazine, example below. Other duties Ken has are those of Senior Landscape Architect in Maintenance Operations Division in Austin.



"NOW FEZBY, THIS LITTLE PAINTING JOB I WAS TELLING YOU ABOUT... FEZBY.... FEZBY.....FEZBY.....

About Our Pictures . . .

On the cover, the Dallas skyline is framed by the Cadiz Street Bridge on Interstate 35E.

The ghost town pictured inside the front cover is the abandoned mining town of Study Butte on State Highway 118.

The "good old days" were not so long ago. The picture inside the back cover was taken in 1940. Subject is the Trinity River Bridge on State Highway 7, west of Crockett.

TEXAS HIGHWAY COMMISSION

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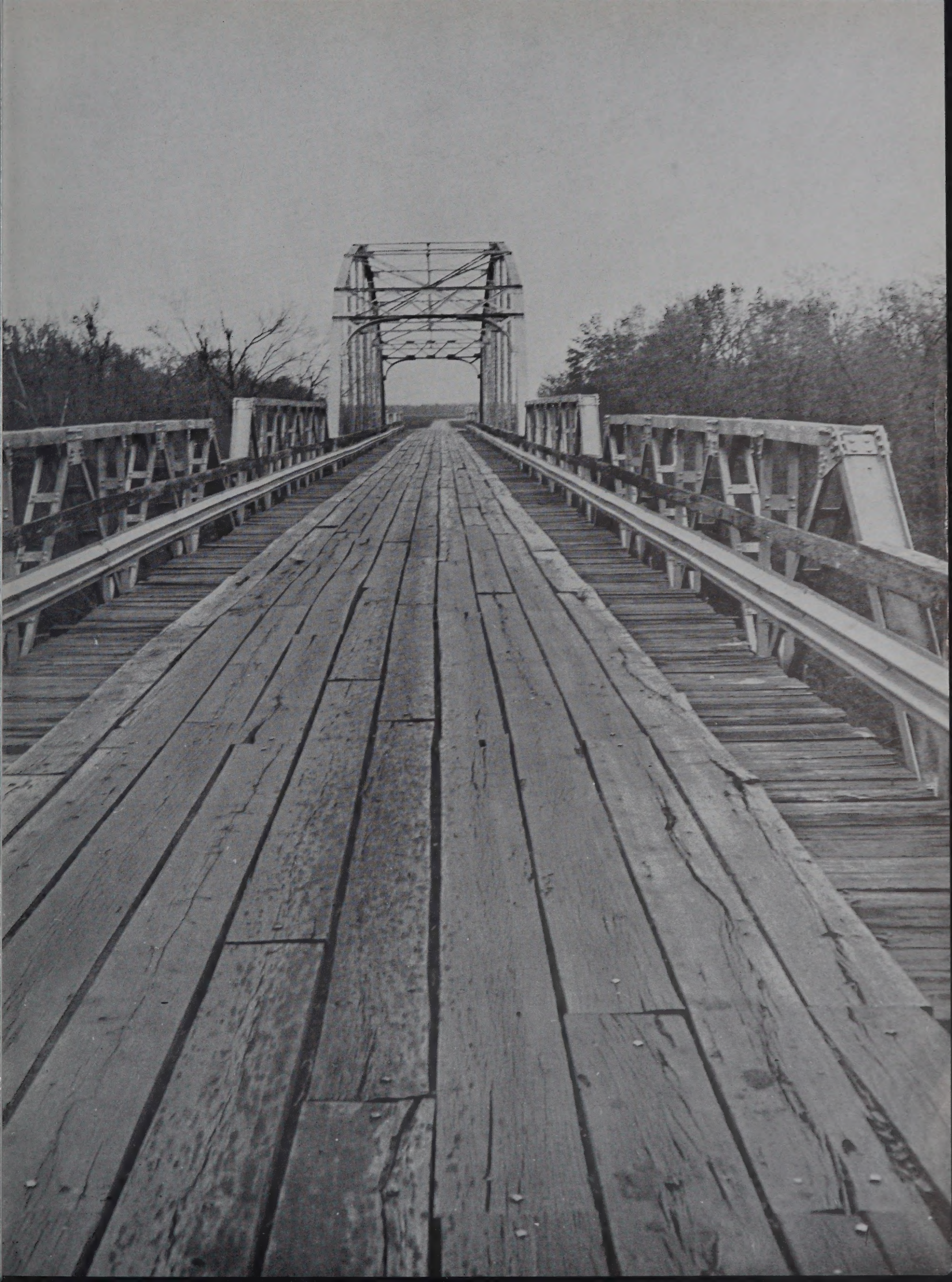
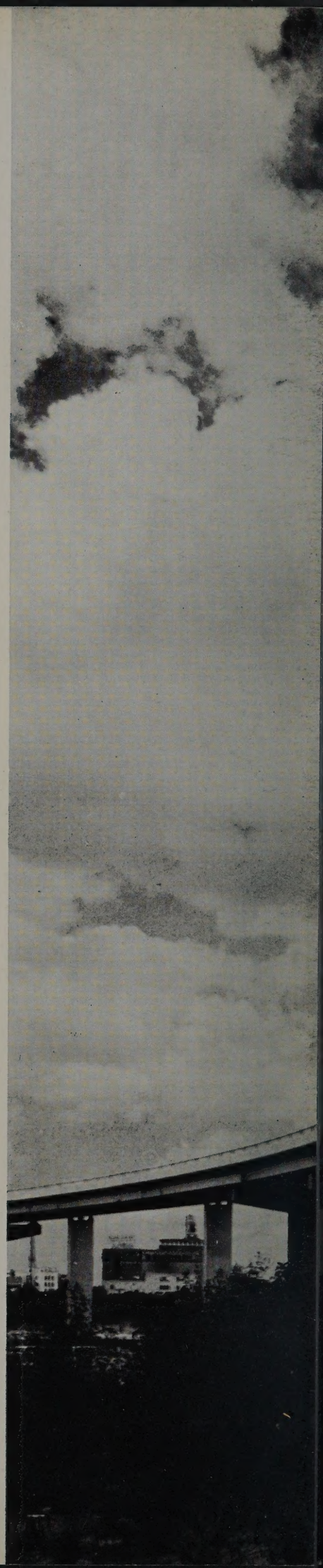
CHARLES F. HAWN	Member
HAL WOODWARD	Member
D. C. GREER	State Highway Engineer

Texas Highways

TEXAS HIGHWAYS, official journal of the Texas Highway Department, is published in the interest of highway development in Texas and for departmental education in the improvement of construction, maintenance, and operation.

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